

**ENHANCED LITHOGRAPHIC
DISPLACEMENT MEASUREMENT SYSTEM**

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ABSTRACT OF THE DISCLOSURE

Measurements of an interferometric measurement system are corrected for variations of atmospheric conditions such as pressure, temperature, and turbulence using measurements from a second harmonic interferometer (SHI). A ramp, representing the dependence of the SHI data on path length, is removed before utilizing the SHI data. The SHI may include a passive Q-switched laser as a light source and Brewster prisms in the receiver module. Optical fibers may be used to conduct light to the detectors. A mirror reflecting the measurement beams has a coating of a thickness selected to minimize the sensitivity of the SHI data to changes in coating thickness.

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